October 14, 2019

Jim Childress
VP Environmental Compliance
Clean Harbors Environmental Services, Inc.
2815 Old Greenbrier Pike
Greenbrier, TN 37073

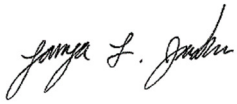
REPORT: THIRD-PARTY LDAR EVALUATION AND COMPLIANCE ASSISTANCE PROGRAM FOR CLEAN HARBORS RECYCLING SERVICES OF HEBRON, LLC

Dear Mr. Childress:

Montrose Air Quality Services, LLC (MAQS) would like to thank you for the opportunity to provide an LDAR compliance audit of the Clean Harbors Recycling Services of Ohio (Clean Harbors Ohio).

Our team of professionals worked directly with Clean Harbors Ohio staff during the audit. This report documents the findings and recommendations that MAQS identified. The audit period was to cover 5 years, therefore MAQS reviewed all materials available from 2014 to present day. All items not available will be noted.

Respectfully Submitted,



Tanya Jackson
Director of Client Accounts, LDAR Division
Montrose Air Quality Services, LLC

I. PERSONNEL INTERVIEWED DURING AUDIT

Mike Pregent, Site General Manager
Jeff Storts, Operations Manager
Marcelino Claudio, Maintenance Manager
Jim Laubsted, Senior Facility Compliance Manager
Jeff Wilson, Jerry Oder, Dennis Williams, Maintenance Technicians (LDAR Technicians)

II. MAQS PERSONNEL, ROLES AND RESPONSBILITIES

Tanya Jackson, Director of Client Accounts-project team lead and reviewed all processes, forms and documentation, compiled report
Bill Winchester, Senior Project Manager-assisted in report review
John Leitel, Client Project Manager-onsite process and equipment applicability, method 21 audit, method 21 training, inventory and equipment audit.

III. APPLICABILITY DETERMINATION

MAQS identified the Clean Harbors Ohio facility was performing LDAR inspections in accordance with 40 CFR Part 63 Subpart DD (DD) under the Clean Air Act (CAA) for Non-hazardous Waste, 40 CFR Part 264 Subpart BB (BB) under the RCRA (RCRA) for Solid Hazardous Waste. DD allows for the use of 40 CFR Part 61 Subpart V or 40 CFR Part 63 Subpart H for Equipment Leaks and BB allows for Part 63 to cover equipment leaks. Clean Harbors Ohio was implementing V, however an amendment to DD eliminated the option to use V as of March 18, 2016 and therefore H would take over. The facility failed to switch over to H. The following regulations are applicable for equipment leaks at Clean Harbors Ohio.

January 1, 2014-March 17, 2016
40 CFR Part 63 Subpart DD
40 CFR Part 264 Subpart BB
40 CFR Part 61 Subpart V

March 18, 2016 to Present Day (2019)
40 CFR Part 63 Subpart DD
40 CFR Part 264 Subpart BB
40 CFR Part 63 Subpart H

Appendix 1: LDAR Applicability represents which regulations are applicable to which process units for all time periods.

IV. MANAGEMENT OF CHANGE

<u>Current Clean Harbors Ohio Practice</u>
MAQS review the Management of Change process for the Clean Harbors Ohio facility. The following process is currently in place:

According to Mr. Marcelino and confirmed by Clean Harbors Ohio personnel, all components and/or equipment that are not replacement in kind, as well as, modifications to streams and process require documentation on **Exhibit 1: Process Change Request & Notice of Change**. This form is filled out during a meeting held with various affected employees including but not limited to the General Manager and Operations Manager. The Maintenance Manager, Senior Facility Compliance Manager nor the LDAR Technicians are currently involved in these meetings at all times, however Health & Safety Manager is required to sign off on the form evaluating for impacts to safety and health and/or environmental compliance. If the component and/or equipment is like in kind, no meeting or forms are documented. After the meeting and form is documented, all affected employees are notified verbally of the change and a signature is obtained. The LDAR technicians are notified by the maintenance

manager. At this time no one is updating the inventory for these changes, nor are inspection occurring for these changed components as confirmed by the Maintenance Manager and LDAR Technicians. Upon review of the DD reports, additions and removal of components are not documented or tracked in the reports.

MAQS Suggested Change to Practice
MAQS suggests to add a section to the form to include an evaluation effecting LDAR Compliance. This would evaluate changes to applicability for DD, BB and H, evaluate for initial tagging and inventory requirements, initial and ongoing inspection requirements. This would allow for the LDAR Technician to create action items and allow for notification to the Compliance Manager for review of compliance and reporting changes. See **Appendix 2: LDAR Affected Management of Change Process and Form** to be used.

V. LDAR MANUAL

Current Clean Harbors Ohio Practice
MAQS reviewed the Facility-Wide LDAR Manual (Manual) for the Clean Harbors Ohio facility. See **Exhibit 2: Leak Detection and Repair (LDAR) Monitoring Program** (Subpart BB, and DD) for a sample of the current Manual:

The current manual is deficient in documenting the current LDAR Program. The intent of a plan is to provide a guidance document that explains to anyone that were to read it how the program is run, what decisions were made in the past that effect how the program is run and what forms need to be used. It is a training document and a compliance document to set standards and expectations to hold personnel accountable. This plan fails to provide guidance other than basic component inspection and repair requirements according to Subpart V. However, Subpart V is no longer allowed.

The plan fails to discuss and/or provide the following:

- Processes or equipment applicability determinations, exemptions and why, it simply lists streams that are applicable and exempt
- Roles and Responsibilities
- A list of any unsafe to monitor or difficult to monitor components, a plan for monitoring such designated components along with a reason for the determination
- Training frequency
- Sample forms

MAQS Suggested Change to Practice
MAQS has developed a new Facility-Wide LDAR Manual, see **Appendix 3: LDAR Monitoring Plan**. The new LDAR Manual documents the following, including samples of all forms and tags utilized:

- Introduction of LDAR, the Facility and the regulations
- Plan Update History
- Regulatory applicability and exemptions
- LDAR applicability and exemptions
- Safety Management
- Roles and Responsibilities
- Training
- Database Management
- Inventory – includes DTM components list, reason and written plan to inspect
- Inspections – includes schedule
- Instrumentation

- Repairs
- Other Inspections
- Management of change
- Recordkeeping
- Reporting

VI. LDAR CALIBRATION PROCEDURE REVIEW

Current Clean Harbors Ohio Practice

MAQS reviewed the Calibration procedures for U.S. EPA Method 21, including instruments, gases and levels. The following process is currently in place:

The LDAR Technicians were utilizing an MSA Passport PID, serial number PPII 00914, from 2014-March 2019. Technicians performed calibrations (**Exhibit 3: MSA/PID Calibration Log**) and a calibration-precision/response time test (**Exhibit 4: MSA/PID Performance Evaluation**) monthly prior to inspections. No documentation besides the date and person performing the calibration and instrument was documented. The gases used were not documented nor the certificates saved. There were 26 instances from 2014-2019 where a calibration was not recorded, where inspections were documented. All inspection and leak information does not indicate what instrument was used. There is no way to verify that the instrument used was the instrument calibrated. There were 6 instances of calibration-precision tests not performed within 3 months of the last test. There are no maintenance records to know if the instrument was calibration-precision tested prior to placing back into service.

Beginning in April 2019, Clean Harbors Ohio purchased a Thermo TVA-2020 Flame Ionization Detector (FID), serial number 202019054256. However, there were no calibration gases on location for the instrument. Manager 1 was the only personnel trained in calibrating the instrument, however documentation of calibrations had not been recorded. Upon observation of the calibration procedures Manager 1 was using the improper warm up time, the flow rate had not been checked, probe diameter was accurate, extension probes are not used on location by anyone, correct procedures were used for calibrating, however nothing was documented.

Observation of Manager I performing the calibration-precision verified that he was not following proper Method 21 procedures to perform the calibration-precision test. Manager 1 was only using the zero-gas ppm one time initially and did not alternate between zero and the methane gas. He failed to document the test and failed to calculate if the readings were within 10% of the actual gas.

Manager 1 knew the response time of his instruments; however, he did not alternate between the gases and therefore did not follow the proper Method 21 procedure. Response factors were determined for the PID and documented on the calibration form, but had not been determined for the FID.

The following deficiencies were identified (See **Exhibit 5: Calibration Findings and Exhibit 6**: **Calibration-Precision Response Time Findings**):

- Certificates of Analysis were not kept for each calibration gas.
- Precise values in ppm of the gases used were not documented on the calibration, calibration-precision test forms, simply zero and 100ppm or 500ppm were documented.
- Expiration dates and Lots or identifying bottle numbers were not listed on the calibration form, no way to tie the actual calibration gases used even if certificates of analysis are obtained from lab.
- Calibration tests for 26 monitoring events were not found.
- Lots or identifying bottle numbers were not listed on the calibration-precision form. Expiration dates may allow for matching of certificates of analysis to tests performed.
- Instrument were warmed up for only 2 minutes, not warmed up long enough to manufacturer recommended 30 minutes.

- Calculation within 10% accuracy for Calibration-Precision test was not performed, however a final number was documented.
- Response time steps and seconds for each run was not documented. Only the date, signature and final number.
- There is no documentation of maintenance performed on equipment.
- Response time was not performed every 3 months in 6 instances.
- Response Time was not performed per EPA Method 21, during observation of all technicians.

MAQS Suggested Change to Practice

The LDAR Technicians are not using forms that have required fields to document proper information for leaking and non-leaking equipment for Method 21 inspections. Calibration, Calibration-Precision, Response time forms show inaccurate instructions and do not offer proper fields for documentation. MAQS recommends to use new forms created by MAQS will proper fields and one set of instructions to simplify the documentation process. See **Appendix 4: U.S EPA Method 21 Calibration Form** and **Appendix 5: U.S EPA Method 21 Calibration-Precision Form**. MAQS suggests that these be turned in daily to be reviewed and ensure the accuracy and completeness of the data.

MAQS suggests that Clean Harbors Ohio take one of the three options below to implement for Method 21 data management and recordkeeping:

1) Hire a QA Coordinator or assign current personnel to collect, compile and review all LDAR documentation daily to import into the Clean Harbors internal compliance database WIN; or
2) Contract an LDAR Database to manage the inspection data in one place, utilizing electronic collection methods via Bluetooth, allowing export into excel to be imported into the Clean Harbors internal compliance database WIN; or
3) Contract a Third Party LDAR Contractor to perform your inspections utilizing an LDAR Database, allowing export into excel to be imported into the Clean Harbors internal compliance database WIN;

MAQS recommends daily & monthly QA/QC of the LDAR program documents other than those persons who are implementing the program. This person is to validate that the program remains in compliance. This shall include a monthly field audit of method 21 procedures and inventory audit.

VII. TRAINING

MAQS performed US EPA Method 21 training with Mr. Williams, Mr. Oder, Mr. Wilson and Mr. Claudio and visitors from various other facilities. The training consisted of an in-class Powerpoint presentation reviewing Method 21 after which a test was given. Then an in-field hands on review was completed on how to calibrate, calibrate-precision test and perform response time test, after which each person was required to perform each on their own. Then an in-field portion on how to inspect components via Type I Method 21 was reviewed and then each person had to perform the inspection and show they understood how to perform the inspection and quantify a leak. See **Exhibit 7: Method 21 Training** for training material, tests and sign in sheets for training provided. All who were trained passed the in-field portion, 3 were required to retake the in-class test.

Current Clean Harbors Ohio Practice

MAQS reviewed the training program currently in place, see **Exhibit 8: Training For LDAR Inspector**. While the training program is listed in the current LDAR manual, there is no documentation to suggest it occurs on any kind of frequency. Clean Harbors Ohio was unable to provide training documents.

MAQS Suggested Change to Practice

MAQS recommends implementing a training program to be implemented including, US EPA Method 21, LDAR Manual review, regulatory review, facility process, component leak path identification on an annual basis with monthly trainings/meetings on various topics including issues currently going on and new materials such as process knowledge, regulatory knowledge and component leak path design. All trainings should include a test, sign in sheet and handout materials. See **Appendix 6: LDAR Training Program** in for new training program recommendations.

VIII. LDAR MONITORING AND REPAIR RECORDKEEPING

Current Clean Harbors Ohio Practice

MAQS reviewed LDAR monitoring and repair recordkeeping for 5 years. The following recordkeeping process is currently in place:

Technicians were identified as Technician 1, 2 and 3 during the observations.

Technician 1 was observed performing Method 21 inspections in the worm pit area on 10/2/2019 at 7:35am. He was observed inspecting at the proper distance from components. However, he was observed not remaining at leaks found for twice the response time and was unsure of what response time was, his probe was not perpendicular to the leak interface and he skipped leak paths on the valve body seams and connectors and did not complete entire circumference of components while inspecting. He inspected 175 sources in 50 minutes. He did not document the leak or readings on any log. He did not hang a leak tag for the 1 leak he found. Auditor observed Open ended lines that the technician did not identify.

Technician 2 was observed performing Method 21 inspections in the worm pit area on 10/2/2019 at 8:25am. He was observed inspecting at the proper distance from components, monitoring at the maximum leak point. However, his probe was not perpendicular to the leak interface and he skipped leak paths on the connectors and did not complete entire circumference of components while inspecting. He inspected 220 sources in 50 minutes. He only documented 2 of the leaks on the valve log, with no ID number. Readings were not documented on any log. He did not hang a leak tag for the 4 leaks he found. Auditor observed Open ended lines that the technician did not identify.

Technician 3 was observed performing Method 21 inspections in the worm pit area on 10/2/2019 at 10:20am. He was observed inspecting at the proper distance from components and his probe was perpendicular to the leak interface. However, he was observed not remaining at leaks found for twice the response time, and he skipped leak paths on the many types of components and did not complete entire circumference of components while inspecting. He inspected 180 sources in 20 minutes, moving way too quickly. He did not find any leaks or document readings on any log. Auditor observed Open ended lines that the technician did not identify.

There is no inspection documentation other than a date of inspection documented (**Exhibit 9: Federal Equipment Leak Standards Monitoring Report**) with the equipment name list only for pumps and a check mark if leaks were found, technicians name and if it was ok or n/a. However, the leak checkmark does not always match the reports. Valve monitoring form only lists all valves inspected, but does not list out a single valve. Agitators and connectors were not inspected.

The technicians perform the majority of their inspections in one day for all valves and pumps. Flanges are inspected visually, however no documentation was provided. The leak threshold of 500ppm is used for all component types, regardless of the regulation standards to be conservative. Upon indication of a leak the technicians try to repair the leak, if the leak is repaired then no documentation of the leak is recorded. If the leak cannot be repaired immediately, the technician writes on the monitoring log or on a scrap of paper the description and reading and turns it into Mr. Claudio. The technicians indicate they hang a leak tag, but no indications of this practice occurred during our observations. Mr. Claudio fills out a work order for repair.

These work order are used to report leaks semiannually. Therefore, only leaks that require a work order are reported.

The repairs are documented in the work order. The technicians indicated if a replacement of the component is made such as a pump seal, then the leak is not reinspected to verify vapor tight. If the leak is repaired then the leak is reinspected. The reading and date of the reinspect is not documented anywhere. Mr. Claudio sends the work orders to Mr. Steve Bley, Senior Compliance Manager. Mr. Bley prepare the reports and sends to Mr. Laubsted. Mr. Laubsted prepares the cover letters and submits the reports.

2014-2019 Q2
Weekly visual pump inspections were complete and accurate, except for 2014-June 2015 where no records were available. Weekly visuals indicate a pass or fail, no statement is included. Monthly pump inspections were complete and accurate for all of 2014-2019, except that the instrument used was not documented and October, November, December 2018 there were no logs. Valves were monitored quarterly, but no documentation or readings other than the date and technician who monitored. As of March 18, 2016 valves should have been monitored monthly and percent valves leaking calculation if determined applicable would allow transition to monthly. No calculations were performed to identify if allowed to move to quarterly. Connectors were not monitored. Flanges were only visually inspected. Annual difficult to monitor valves were monitored with date and technician documented for each year. First attempts of repair not documented. Date of leaks found is only documented for leaks that need a work order to repair. The date of final repair documented and repair action is documented in the work order for leaks not fixed the same day. The date of retest is not documented or the reading.

Technicians and Mr. Claudio indicate that the inventory of components is not maintained. The newest update was in 2013. An audit of the inventory showed that flanges, union and OELs are identified in the inventory, but not other connectors, therefore total count of connectors is missing. In an audit of the difficult to monitor components, from a list of 46 components, 27 were found and identified as not meeting the definition and could be reached with a standard probe. 6 were not located and 13 met the definition. Inventory not reflecting accurately. A number of missing tags and OELs were identified during this time. Sizes did not accurately reflect to match the components in the field. Incorrect descriptions of equipment, components still in the inventory that are actually out of services and completely removed equipment.

Subpart H requires a total count of components, identification of agitators, identification of group of sampling connection systems and instrumentation systems to be kept on file. There is no available record for the total connectors on location, agitators, sampling connection systems and instrumentation systems. However, confirmed that all exist on location.

Inventory identification list is not representative of totals reported on added and removed components.

2014-Mar. 17, 2016 Recordkeeping under Subpart V

The following deficiencies were identified (**Exhibit 10: Recordkeeping Findings 2014-March 17, 2016**):

- Not staying at leak to for twice the response time to determine the maximum reading during observation of technician.
- Not inspecting all components and leak paths during observation of technician.
- Not holding the probe perpendicular to the leak interface during observation of technician.
- No documentation of the background or reading for any components leaking or not leaking during observation of technician.
- No leak tag hung in the field on unrepaired leak found during observation of technician.
- Weekly visuals missing for 2014-June 2015
- All inspection logs did not document the instrument utilized for monitoring, there is no way to confirm if the instrument calibrated was the instrument utilized during the inspections.

- All documentation for 2014-2016 did not indicate the instrument utilized, did not indicate the original leak reading, the repair performed, the final retest reading.
- No Leak Detection Tracking forms provided that would provide the leak date and reading, repair attempts, repair date and repair performed, and retest date and reading. Therefore, information not available.
- Facility indicates delay of repair is not used at location.
- The date of retest is not documented.
- Maximum instrument reading was not recorded for any monitoring events.
- Inventory on file does not represent in field inventory for Difficult to Monitor Components and connectors.
- List of components added and removed is not kept.

March 18, 2016-2019 Q2 Recordkeeping under Subpart V, however should have been under Subpart H

The following deficiencies were identified (**Exhibit 11: Recordkeeping Findings March 18, 2016-Present day**):

- Monitoring, repairs and recordkeeping in accordance with incorrect regulation (V instead of H)
- Weekly Visual agitator logs are missing for 2016-2019.
- Monthly pump logs missing for Oct-Dec 2018. Monthly Agitator logs are missing for 2016-2019.
- Monthly/Quarterly valve logs missing for 1st and 2nd halves of 2018 and 1st half of 2019.
- Difficult to Monitor valves logs missing for 2018
- Annual Visual inspection log for CVS hard piping is missing for 2017
- Annual Method 21 inspection log for CVS duct work is missing for 2016-2019.
- Annual Connector log is missing for 2016-2019.
- No calibrations or gases used since April 2019.
- Connector monitoring on opened or seal broken connectors logs is missing for 2016-2019.
- All inspection logs did not document the instrument utilized for monitoring, there is no way to confirm if the instrument calibrated was the instrument utilized during the inspections.
- All log for 2016-2019 did not indicate the instrument utilized, did not indicate the original leak reading, the repair performed, the final retest reading.
- No Leak Detection Tracking forms provided that would provide the leak date and reading and retest date and reading. Therefore, information not available.
- Retest of leaks after repair, the date of retest is not documented.
- Valves inspected quarterly, not monthly, no percent leaking valves determined to switch to quarterly.
- Flanges never monitored via Method 21, only visual
- Maximum instrument reading was not recorded for all monitoring events, only the date.
- Inventory on file does not represent in field inventory for Difficult to Monitor Components and connectors.
- Inventory count of connectors not available
- Inventory of agitators not available
- Inventory identification of sample connection systems not available
- Inventory identification of instrumentation systems not available
- Design criteria for leaks on dual mechanical seals pumps/agitators not available
- List of components added and removed is not kept.

<u>MAQS Suggested Change to Practice</u>
MAQS recommends the following practices be put in place:

- Audit the entire inventory and get lists of components up to date
- Perform QA/QC daily on inspection records to ensure accuracy, completeness and compliance

- Perform QA/QC daily on repair records to ensure accuracy, completeness and compliance
- Update leak tracking form to capture all information required for recordkeeping (See **Appendix 7: Process Leak Tracking and Retest**)

Much of the current documentation practices is limited or does not exist at all. MAQS suggests that Clean Harbors Ohio take one of the three options below to implement for Method 21 data management and recordkeeping:

1) Hire a QA Coordinator or assigned personnel to collect, compile and review all LDAR documentation daily to import into the Clean Harbors internal compliance database WIN; or
2) Contract an LDAR Database to manage the inspection data in one place, utilizing electronic collection methods via Bluetooth, allowing export into excel to be imported into the Clean Harbors internal compliance database WIN; or
3) Contract a Third Party LDAR Contractor to perform your inspections utilizing an LDAR Database, allowing export into excel to be imported into the Clean Harbors internal compliance database WIN;

MAQS recommends daily & monthly QA/QC of the LDAR program documents other than those persons who are implementing the program (See **Appendix 8: QA/QC Standards**). This person is to validate that the program remains in compliance. This shall include a monthly field audit of method 21 procedures and inventory audit.

IX. LDAR REPORTING

Current Clean Harbors Ohio Practice

MAQS reviewed 5 years of reports for Subpart DD. The following reports are currently in place:

2014-Mar. 17, 2016 Reported under Subpart V

The following are deficiencies (See **Exhibit 12: Reporting Findings 2014-March 17, 2016**):

- Number of pumps reported and number of pumps repaired on work orders does not match 2014-1st half 2015
- Results for performance test for no detectable emissions is not reported
- Reports are not broken out by process unit for reporting leaks, it simply states the process unit for each leak
- The additions and removal of components was reported as none, however there have been changes that have not been tracked or reported.

March 18, 2016-2018 Q4 Reported under Subpart V, however should have been under Subpart H

The following are deficiencies (See **Exhibit 13**: **Reporting Findings March 18, 2016-Present day**):

- Reports are not broken out by process unit for reporting leaks.
- Percent leaking valves, pumps, compressors, connectors and agitators were not calculated or reported
- Total components monitored for valves, pumps, compressors, connectors and agitators were not reported
- Number of leaking agitators and connectors were not reported
- The additions and removal of components was reported as zero, however there have been changes that have not been tracked or reported.
- PRD monitoring results not reported
- CVS monitoring results not reported

MAQS Suggested Change to Practice

MAQS recommends formatting reports to follow Subpart H. See **Appendix 9: Semi-Annual Report** as an example template.

X. SUMMARY

In Summary, MAQS observation of process, operations, and documentation is that Clean Harbors Ohio facility would greatly benefit from more training and knowledge of the regulations and requirements. Implementation of standardized forms will simplify the data and organize it in a manageable way which would improve the recordkeeping and reporting. There is no efficient way to ensure compliance in the current program.